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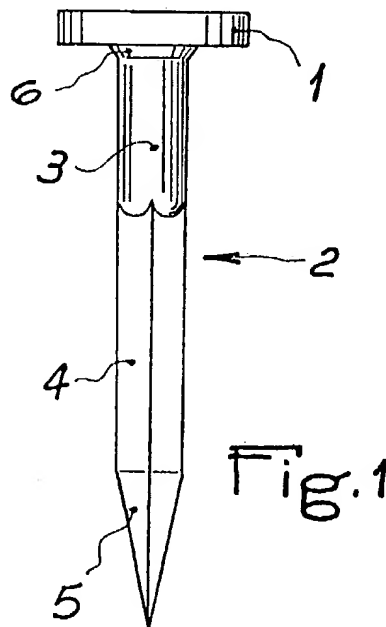
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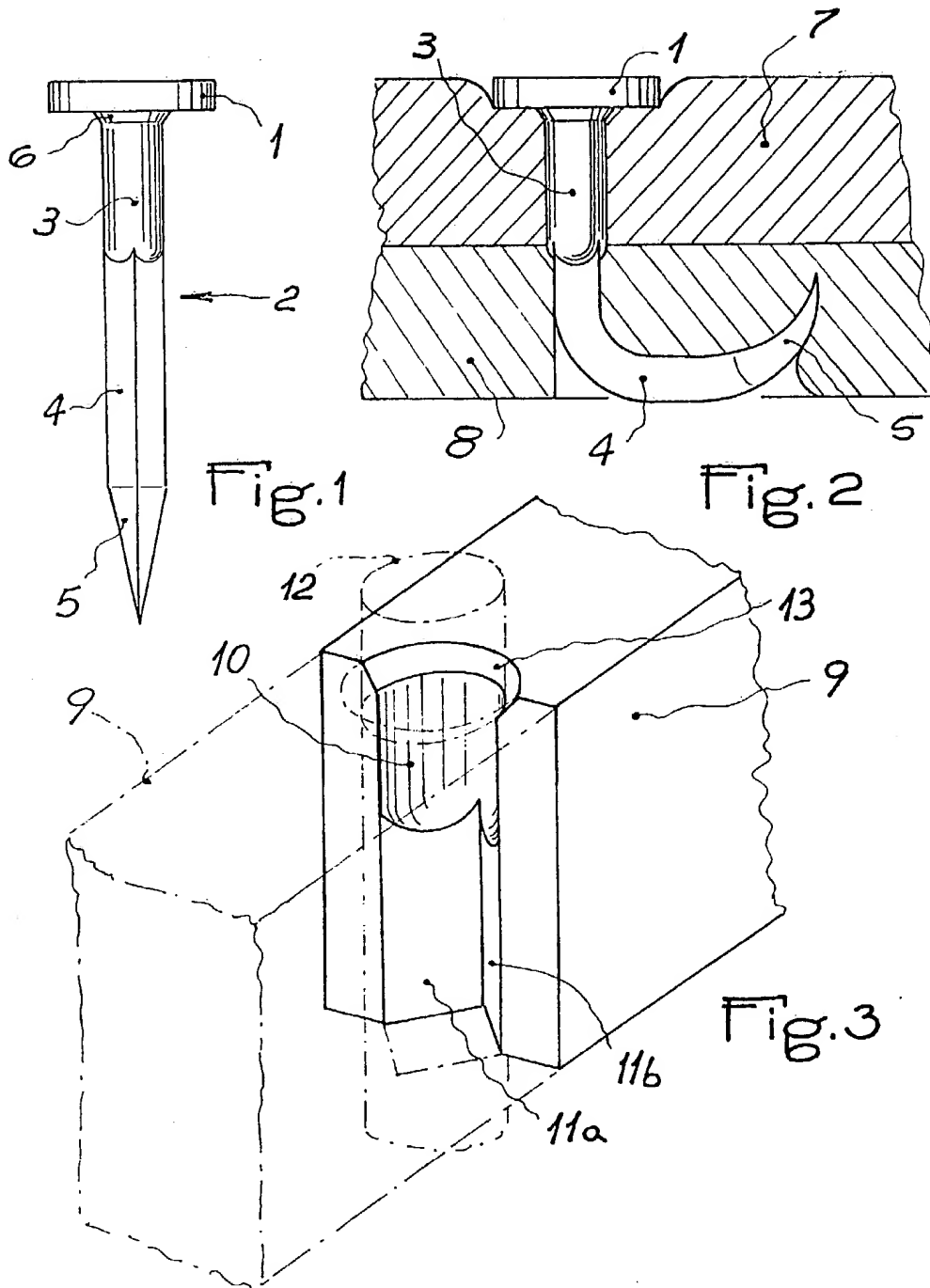
(54) **Nail for footwear and method of making same**

(57) A nail for footwear, the nail having a shank (2) with a cylindrical part (3) extending from a head (1) to approximately half way down the nail and this is followed by a part (4) of polygonal section, preferably square, the shank terminating in a pyramidal point (5).

A method of making the nail comprises gripping wire between two dies to form the cylindrical and polygonal-section parts (3,4), punching the projecting part of the wire to form the head (1), and cutting the wire by means of a further die to form the point (5).



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SPECIFICATION

Nail for footwear and method of making same

5 This invention relates to a nail for footwear and to a method of making same.

When making shoes, a nailing operation is often carried out to attach a sole to turned-over edges of an upper. This operation is carried out by driving several nails, usually by means of an automatic machine, into the sole. The nails are bent over, on the side of the upper, inside the shoe, with the aid of a last.

15 The nails used for this operation either have a cylindrical shank or a pyramidal shank with a square section.

Nails having a cylindrical shank are particularly suitable for use with the automatic machines, since they can easily be placed by means of such machines in the appropriate position, but they require a relatively high degree of force to drive them home. Also, in the process of striking the nails on the last, they may be upset and deformed in an irregular manner, thereby detracting from the appearance and effectiveness of the nailing.

Pyramidal nails, or tacks, which are quite widespread, have four edges along their shank. These nails require less force than the cylindrical nails to drive them home. Also, because they have progressively decreasing sections of resistance, they bend over in a regular manner on the upper when they are driven in. However, because of their shape, with their flat oblique surfaces, they are difficult to use in the automatic machines. Also, since there are often four pieces of moulding burr present, frequently extending as far as the lower surface of the head of the nail, these can cause the nailing machine to jam and cause cuts in the material of the upper, which may contribute to splits occurring.

The problem therefore arises of making a nail for footwear which can be readily driven in by an automatic nailing machine, requiring limited force for this purpose, involving a lesser degree of stress and thus longer life for the machine itself, and the nail being bent over correctly onto the upper when it is driven in. Such a nail should be able to be made according to a rapid and economical method, without exhibiting burr or machining defects.

According to one aspect of the present invention, there is provided a nail for footwear, the nail comprising a flat head and a shank, said shank having a cylindrical part extending from said head, said cylindrical part leading into a part of polygonal cross-section, this latter part terminating in a multi-sided point.

The part of polygonal cross-section may be square.

The multi-sided point may be pyramidal.

65 The cylindrical part and the part of polygo-

nal cross-section may be of substantially the same length. In addition, in order to avoid bending or breakages of the head of the nail between said cylindrical part and said head, a frustoconical reinforcement joint can be provided.

70 According to the second aspect of the present invention, there is provided footwear incorporating nails each essentially as defined in said one aspect of the invention.

According to a third aspect of the present invention, there is provided a method of making a nail for footwear, the method including gripping a wire between two dies, each with an impression having one part with a semi-cylindrical surface to form a cylindrical part of the shank of a nail, and one part with matching polygonal surfaces to form a part of the shank having a polygonal cross-section leading on from said cylindrical part, punching a part of said wire projecting from the dies beyond said one part to form a head of the nail, and cutting said wire by means of another die at the end of said second part and shaping it to a multi-sided point.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawing, in which:-

95 *Figure 1* is a diagrammatic side view of a nail for footwear,

Figure 2 is a diagrammatic view illustrating the nail of *Fig. 1* positioned and driven into the sole of a shoe, and

100 *Figure 3* is a schematic view of a die for making the nail.

The nail shown in *Fig. 1* includes a head 1 joined to a shank 2 which has an upper cylindrical part 3 and a lower part 4 of square cross-section, with the diagonal equal to the diameter of the cylindrical part 3, and terminating in a pyramidal point 5. A frustoconical joint 6 is provided between the head 1 and the shank 3 in order to strengthen the connection of the head to the shank.

As shown in *Fig. 2*, the square section part 4, when the nail is driven into the sole of a shoe 7, in order to secure it to an upper 8, since it has less resistance, can be hammered and bent over without bending or upsetting the cylindrical part 3, which has a section of greater resistance.

The present nail can be produced with known machines, from wire, using a die 9 such as that shown schematically in *Fig. 3*. The die 9 has two pieces, each having a part 10 with semi-cylindrical surfaces, capable of gripping a steel wire from which the nail is to be made, and a part 11 with identical flat rectangular surfaces 11A and 11B.

When the wire is gripped in the die, the opposing parts 10 form the cylindrical part 3 of the nail and the opposing parts 11A and 11B form the part 4 of square cross-section.

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A punch deforms a projecting part 12 of the wire to make the head 1 of the nail and a flared portion 13 provides for the formation of the frustoconical portion 6. An additional die,

5 not shown, then cuts the wire at the end that forms the free end of the shank 4 in order to make the pyramidal point 5.

The present nail can be used to advantage in automatic nailing machines, its handling being facilitated by the presence of the cylindrical parts 3, whilst the part 4 makes for easy penetration, requiring less effort than that which is necessary with a totally cylindrical nail.

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CLAIMS

1. A nail for footwear, the nail comprising a flat head and a shank, said shank having a cylindrical part extending from said head, said cylindrical part leading into a part of polygonal cross-section, this latter part terminating in a multi-sided point.

2. A nail according to claim 1, wherein said part of polygonal cross-section is square.

25 3. A nail according to claim 1 or 2, wherein said multi-sided point is pyramidal.

4. A nail according to claim 1, 2 or 3, wherein said cylindrical part and said part of polygonal cross-section are of the same length.

5. A nail according to any one of the preceding claims, wherein a frustoconical part interconnects said head with said shank.

6. A nail for footwear, substantially as hereinbefore described with reference to the accompanying drawing.

7. Footwear incorporating nails each in accordance with any one of the preceding claims.

8. A method of making a nail for footwear, the method including gripping a wire between two dies, each with an impression having one part with a semi-cylindrical surface to form a cylindrical part of the shank of a nail, and one part with matching polygonal surfaces to form a part of the shank having a polygonal cross-section leading on from said cylindrical part, punching a part of said wire projecting from the dies beyond said one part to form a head of the nail, and cutting said wire by means of another die at the end of said second part and shaping it to a multi-sided point.

9. A method according to claim 7, wherein said second part of said two dies has two identical flat rectangular surfaces with the apex on the centre line.

10. A method of making a nail for footwear, substantially as hereinbefore described with reference to the accompanying drawing.